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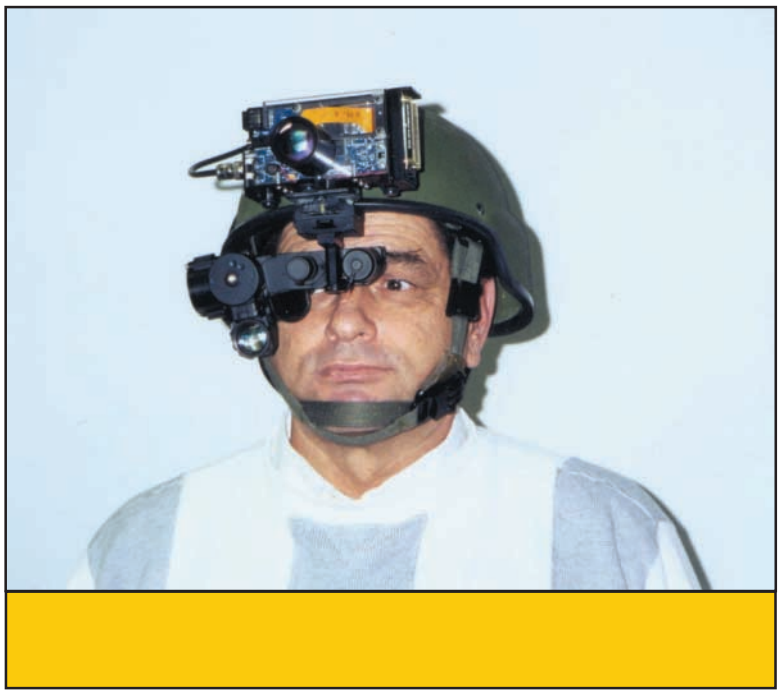
Science and Technology for Tomorrow's Aerospace Forces

Success Story

HELMET-MOUNTED INFRARED IMAGING AND COMMUNICATIONS SYSTEM AIDS FIREFIGHTERS



The Advanced Rescue Vision System (ARVS) provides fire departments with multiple capabilities. Firefighters can use the new lightweight, hands-free imaging and communications system to quickly locate victims in smoke-filled buildings or aircraft. Fire commanders can use the system to more effectively conduct command and control operations on both the exteriors and interiors of burning structures. ARVS speeds up the rescue process, enhances communications between fire commanders and firefighters, and for the first time, provides firefighters with an opportunity to view the actual fire condition inside burning buildings or large-frame aircraft. In a decisive way, this new technology takes the guesswork out of nighttime operations.

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Accomplishment

The Materials and Manufacturing Directorate, working with Zybron, Inc. of Beavercreek, Ohio, developed a helmet-mounted infrared imaging and communications system for firefighters under a Phase I and II Small Business Innovation Research contract. The ARVS is a major leap forward in firefighter-capable infrared imaging devices. Designed exclusively for firefighters, the system's enhanced video and audio capabilities provide clear images and uninterrupted communications through dense smoke often encountered in burning buildings or aircraft. Zybron expects a decrease in the cost of this technology from $25,000 per unit to under $5,000, enabling fire departments to buy more units and improve lifesaving capabilities.

Background

ARVS is a helmet-mounted, state-of-the-art, long wavelength infrared (LWIR) imaging and communications system that helps firefighters locate victims and entrapped individuals, and objects or obstructions through dense smoke, fog, and dust. These conditions typically restrict or severely limit the effectiveness of fire-fighting tactics in large smoke-filled structures and during nighttime warfighting situations.

ARVS accurately relays video images and audio transmissions to firefighters and fire commanders, who make immediate decisions regarding rescue and operations. The new device detects and displays minute temperature differences as small as .07ºC, which enables firefighters to distinguish between combustion, furniture, humans, and obstructions including collapsed ceilings.

Air Force pilots could use this new LWIR system to pinpoint enemy aircraft and ground targets by day or night and in all kinds of weather. ARVS could become an ideal tool for helping medical personnel perform life-saving emergency surgery on the battlefield without the benefit of light. Zybron could transition ARVS to the United States Army, Marines, Border Patrol, Special Forces, and Security Forces at sensitive military sites at home or abroad.

Materials and Manufacturing
Technology Transfer

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTT, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (01-ML-08)